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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,326	10/24/2003	Blake Lewis	103.1033.02	8241

48102 7590 08/10/2007
NETWORK APPLIANCE/BLAKELY
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EXAMINER	
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ART UNIT	PAPER NUMBER
2167	

MAIL DATE	DELIVERY MODE
08/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/693,326	Applicant(s) LEWIS ET AL.
	Examiner Miranda Le	Art Unit 2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,22-34 and 46-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11, 22-34, 46-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/25/07 has been entered.

2. This communication is responsive to Amendment, filed 05/14/07.

Claims 1-11, 22-34, 46-62 are pending in this application. In the Amendment, claims 46-62 have been added, and claims 12-21, 35-45 have been cancelled. This action is made Final.

Claim Objections

3. Claims 53, 61 are objected to because of the following informalities: Claims 53, 61, line 3, "have bee reserved" should be changed to "have been reserved".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. § 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

5. Claim 46 defines non-statutory processes because as a whole, it merely presents an abstract idea without any practical application that produces a useful, concrete and tangible result.

The claimed process, "receiving...; in response to the request, computing..., reserving..." manipulates abstract ideas to result in an abstract construct (no tangible result), and fails to adequately reflect the described practical utility (no useful result). The last step of the claim recites a reserving step. Since mere reservation is not a tangible result, the claim fails to recite a tangible result as the reserving step is not tangible.

6. Claim 55 defines non-statutory processes because the claim appears to have no claimed result under the condition where the block reservation has not been performed for the file.

The dependent claims 49-54, 57-62 suffer from deficiencies similar to their respective base claims 46, 55, as noted above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 4, 7, 8, 10, 24, 27, 30, 31, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and further in view Guenther et al. (US Patent No. 5,109,336).

As to claims 1, 24, Owada teaches a computerized method of managing a file system for a file server, comprising:

receiving a file operation *(i.e. the writing process, col. 26, lines 37-41)* that signals a reservation operation *(i.e. the optical disk drive D0 used for the writing is reserved, col. 26, lines 64-67)* for a file of the file system, the file having a file size *(i.e. the data block allocation means receives a file size together with the file writing request from the information processor, and allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31);*

computing a first number of blocks needed to accommodate the file size *(i.e. allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31);*

a second number of blocks already allocated for the file *(i.e. FIG. 3 is a schematic diagram illustrating the file management table 121 which is supposed on the memory and used in the data block allocation unit 120. In the file management table 121 shown in FIG. 3, a file name of each file corresponds to all data block numbers allocated to the file, i.e., a used data block number list, col. 13, lines 16-21).*

a fourth number of unallocated blocks needed to accommodate the file size *(i.e. the file access management unit 130 has a disk access management table 131 and a drive access*

management table 132, and the data block allocation unit 120 is constructed so that data blocks corresponding to the received file size are allocated to the requested file, before a data writing process, col. 23, lines 40-51).

Owada does not fairly teach:

subtracting from the first number of blocks a second number of blocks already allocated for the file and a third number of delayed allocated blocks for the file to obtain a fourth number of unallocated blocks needed to accommodate the file size;

using the fourth number of blocks to perform a reservation of unallocated blocks for the file for later allocation.

Cooper teaches:

a first number of blocks needed to accommodate the file size *(i.e. BLOCK 1, 2, 3, N3 of File C, See Fig. 9; Each file has a number of blocks, col. 2, lines 19-35; The size of the file may be preregistered to indicate the maximum capacity of the particular file. The fourth column at 337 represents the number of blocks within the corresponding file in which data can be allocated and released, col. 10, lines 22-48);*

a second number of blocks already allocated for the file *(i.e. BLOCK 1 of File C at 346, and BLOCK 3 of File C at 348, See Fig. 9, col. 10, lines 22-48);*

a third number of delayed allocated blocks for the file *(i.e. BLOCK 2 of File C at 347, See Fig. 9, col. 10, lines 22-48);*

fourth number of unallocated blocks needed to accommodate the file size *(i.e., BLOCK N3 of File C at 349, See Fig. 9, col. 10, lines 22-48);*

using the fourth number of blocks to perform a reservation of unallocated blocks for the file for later allocation *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada and Cooper at the time the invention was made to modify the system of Owada to include the limitations as taught by Cooper.

One of ordinary skill in the art would be motivated to make this combination in order to determine from the allocation tables which of the files and which of the blocks within the files are available in view of Cooper *(col. 2, lines 19-35)*, as doing so would give the added benefit of managing the allocation and releasing of memory space within files shared by a number of hosts as taught by Cooper *(col. 2, lines 9-18).*

Although Owada and Cooper do not explicitly teach subtracting, Guenther teaches the step of subtracting *(i.e. The number of blocks allocated from the global storage list but not yet returned is calculated by monitoring the number of blocks of this size allocated of the global storage list and subtracting from this the number of blocks from this size returned to the global storage list, col. 6, lines 19-37).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper and Guenther at the time the invention was made to modify the system of Owada, Cooper to include the step of subtracting as taught by Guenther.

One of ordinary skill in the art would be motivated to make this combination in order to monitor the number of blocks allocated of the global storage in view of Guenther *(col. 6, lines 19-37)*, as doing so would give the added benefit of delivering a process of efficiently managing

working storage by combining queues of fixed size blocks and a global list of blocks of random sizes as taught by Guenther *(col. 2, lines 35-52).*

As to claims 4, 27, Owada teaches the file operation that signals the reservation operation includes a parameter that specifies the file size *(i.e. the data block allocation means receives a file size together with the file writing request from the information processor, and allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31).*

As to claims 7, 30, Owada teaches said using the fourth number of blocks to perform a reservation of unallocated blocks for the file for later allocation comprises:

checking that a number of available blocks in the file system is greater than the fourth number of blocks, wherein an error is returned in a case that the number of available blocks is less than the fourth number of blocks *(i.e. a file writing error due to shortage of the capacity, col. 14, lines 8-20).*

As to claims 8, 31, Owada teaches the number of available blocks in the file system *(i.e. a file writing error due to shortage of the capacity, col. 14, lines 8-20).*

Cooper teaches:

a number of allocated blocks *(i.e. BLOCK 1 of File C at 346, and BLOCK 3 of File C at 348, See Fig. 9, col. 10, lines 22-48)*, and a number of reserved blocks *(i.e. BLOCK 2 of File C at 347, See Fig. 9, col. 10, lines 22-48);*

adding a number of reserved cached *(i.e. cache storage, Fig. 5)* unallocated blocks *(i.e. Any host may reserve by allocation one or more of the blocks within the files for storing messages created by or received from the host by determining from the allocation tables which of the files and which of the blocks within the files are available, col. 2, lines 19-35).*

Guenther teaches the step of subtracting *(i.e. The number of blocks allocated from the global storage list but not yet returned is calculated by monitoring the number of blocks of this size allocated of the global storage list and subtracting from this the number of blocks from this size returned to the global storage list, col. 6, lines 19-37).*

As to claims 10, 33, Owada teaches a method as in claim 1, further comprising releasing reservation of blocks as blocks are written to storage *(i.e. At steps S1008 and S1009, similar to steps S907 and S908 described in the ninth embodiment, the file is written to the allocated data block. When the writing is completed, at step S1010, the file access management unit 130 changes the access state of the optical disk M3 in the disk access management table 131 to "no access", col. 26, lines 58-64).*

9. Claims 2, 5, 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and Guenther et al. (US Patent No. 5,109,336), and further in view of Hitz et al. (US Patent No. 5,819,292).

As to claims 2, 25, Owada, Cooper and Guenther do not specifically teach the file system uses write anywhere file system layout characterized in that data to be written are written to new blocks instead of being written to blocks previously allocated for said data.

Hitz teaches the file system uses write anywhere file system layout characterized in that data to be written are written to new blocks instead of being written to blocks previously allocated for said data *(i.e. WAFL always writes new data to unallocated blocks on disk, col. 3, line 66 to col. 4, line 12).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther and Hitz at the time the invention was made to modify the system of Owada, Cooper and Guenther to include the limitations as taught by Hitz.

One of ordinary skill in the art would be motivated to make this combination in order to not overwrite existing data in view of Hitz *(col. 3, line 66 to col. 4, line 12)*, as doing so would give the added benefit of maintaining a file system in a consistent state as taught by Hitz *(col. 3, line 66 to col. 4, line 12).*

As to claims 5, 28, Owada, Cooper and Guenther do not explicitly teach computer comprises: determining a total number of direct and indirect blocks needed to accommodate the file size.

Hitz teaches determining a total number of direct and indirect blocks *(i.e. indirect and/or direct blocks, col. 7, lines 37-47)* needed to accommodate the file size *(i.e. including the number of blocks in the file system, col. 10, lines 39-53).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther and Hitz at the time the invention was made to modify the system of Owada, Cooper and Guenther to include the limitations as taught by Hitz.

One of ordinary skill in the art would be motivated to make this combination in order to create read-only copies of a file system in view of Hitz *(col. 5, lines 25-34)*, as doing so would give the added benefit of maintaining a file system in a consistent state as taught by Hitz *(col. 3, line 66 to col. 4, line 12).*

10. Claims 3, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and Guenther et al. (US Patent No. 5,109,336), and further in view of Keller et al. (US Patent No. 6,473,849).

As to claims 3, 26, Owada, Cooper and Guenther do not teach the file operation that signals the reservation is a zero length write request.

Keller teaches the file operation that signals the reservation is a zero length write request *(i.e. zero-length Write(Size) command, col. 12, lines 37-54).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther and Keller at the time the invention was made to modify the system of Owada, Cooper and Guenther to include the limitations as taught by Keller.

One of ordinary skill in the art would be motivated to make this combination in order to generate a lock request in view of Keller, as doing so would give the added benefit of allowing for proper synchronization of lock operations within the distributed memory architecture as taught by Keller *(col. 12, lines 25-54).*

11. Claims 6, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and Guenther et al. (US Patent No. 5,109,336), and further in view of Soltis (US Patent No. 6,697,846).

As to claims 6, 29, Owada, Cooper and Guenther do not teach setting a flag in an inode for the file that indicates blocks have been reserved for the file.

Soltis teaches setting a flag in an inode for the file that indicates blocks have been reserved for the file *(i.e. Each inode file 180 ... The flag determines whether or not the extent addresses real-data or a hole in the file, col. 10, line 51 to col. 11, line 7).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther and Soltis at the time the invention was made to modify the system of Owada, Cooper and Guenther to include the limitations as taught by Soltis.

One of ordinary skill in the art would be motivated to make this combination in order to indicate all the necessary addressing information in view of Soltis (col. 10, line 51 to col. 11, line 7), as doing so would give the added benefit of being able to utilize the small-file access speed, consistency, caching, and file locking that is built into modem client-server file systems as taught by Soltis (col. 6, lines 16-23).

12. Claims 11, 22, 23, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and Guenther et al. (US Patent No. 5,109,336), and further in view of Baylor et al. (US Patent No. 5,634,096).

As to claims 11, 34, Cooper teaches the number of unallocated blocks *(i.e. BLOCK 2, BLOCK N3 of File C at 347, See Fig. 9, col. 10, lines 22-48);*

Owada, Cooper and Guenther do not teach decrementing the number of a reserved unallocated blocks by a number of released blocks.

Baylor teaches the step of decrementing the number of blocks *(i.e. the remaining blocks reserved for the active file and the total remaining blocks reserved by the system are decremented, col. 6, lines 34-44).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther, and Baylor at the time the invention was made to modify the system of Owada, Cooper, and Guenther, to include the limitations as taught by Baylor.

One of ordinary skill in the art would be motivated to make this combination in order to generate the redundant data without significantly affecting the overall system performance in view of Baylor *(col. 1, lines 29-42),* as doing so would give the added benefit of taking checkpoints or "snapshots" of the global disk state, and storing redundant information at those checkpoints. When a failure occurs, the computer can be returned to its most recent checkpoint, and any lost data can be restored from the redundant information stored with that checkpoint as taught by Baylor *(col. 1, lines 29-42).*

As per claim 22, Cooper teaches a method according to claim 1, further comprising:

caching one or more blocks of the file in a buffer *(i.e. cache storage, Fig. 5)*;

writing the one or more blocks to storage *(i.e. Extended processing complex 182 allows references to cache files to be immediately directed to cache storage 190 for processing. It is also understood that cache storage 190 may be a non-volatile memory, col. 6, lines 51-65)*; and

the number of unallocated blocks *(i.e. BLOCK 2, BLOCK N3 of File C at 347, See Fig. 9, col. 10, lines 22-48);*

Cooper does not teach decrementing the number of unallocated blocks by the number of blocks written to the storage.

Baylor teaches the step of decrementing the number of blocks *(i.e. the remaining blocks reserved for the active file and the total remaining blocks reserved by the system are decremented, col. 6, lines 34-44).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther, and Baylor at the time the invention was made to modify the system of Owada, Cooper, and Guenther, to include the limitations as taught by Baylor.

One of ordinary skill in the art would be motivated to make this combination in order to generate the redundant data without significantly affecting the overall system performance in view of Baylor *(col. 1, lines 29-42),* as doing so would give the added benefit of taking checkpoints or "snapshots" of the global disk state, and storing redundant information at those checkpoints. When a failure occurs, the computer can be returned to its most recent checkpoint, and any lost data can be restored from the redundant information stored with that checkpoint as taught by Baylor *(col. 1, lines 29-42).*

As per claim 23, Cooper teaches a method according to claim 22, further comprising setting a caching flag for each block cached in the buffer *(i.e. Upon the request of instruction processor 14 to access a particular data element as either an instruction or operand, the directory of instruction cache 82 or operand cache 84, respectively, is queried to determine if the required data element is present within the associated cache resource. If the data element is present and valid, the access is completed at that level. If not, access is made to storage controller 12 via interface 90 for the block of eight 36 bit words containing the desired data element, col. 4, line 63 to col. 5, line 4).*

13. Claim 9, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owada et al. (US Patent No. 6,185,665), in view of Cooper et al. (US Patent No. 6,055,547), and Guenther et al. (US Patent No. 5,109,336), and further in view of Schmuck et al. (US Patent/Pub No. 5,956,734)), and Akyol et al. (US Patent/Pub No. 6,895,248).

As to claims 9, 32, Cooper teaches said using the fourth number of blocks to perform a reservation of unallocated blocks for the file for later allocation *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

Owada, Cooper and Guenther do not specifically teach:

checking that a fifth number of blocks does not exceed a remainder of a quota for an owner of the file, wherein an error is returned in a case that the fifth number of blocks exceeds the remainder of the quota,

Schmuck teaches checking that a fifth number of blocks does not exceed a remainder of a quota for an owner of the file, wherein an error is returned in a case that the fifth number of

blocks exceeds the remainder of the quota *(i.e. As a quota is a limit on the amount of disk that can be used by a user or group of users, in order to use the concept in our parallel file system, we have created a way for local shares to be distributed by a quota manager (which accesses the single quota file) for parallel allocation, col. 4, line 63 to col. 5, line 9).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther and Schmuck at the time the invention was made to modify the system of Owada, Cooper and Guenther to include the limitations as taught by Schmuck.

One of ordinary skill in the art would be motivated to make this combination in order to create a way for local shares to be distributed by a quota manager for parallel allocation in view of Schmuck *(col. 4, line 63 to col. 5, line 9)*, as doing so would give the added benefit of providing immediate recovery in many situations where sufficient quota exists at the time of the failure as taught by Schmuck *(col. 4, line 63 to col. 5, line 9).*

Owada, Cooper, Guenther and Schmuck do not specifically teach wherein the fifth number of blocks comprises a difference between the first number of blocks and the second number of blocks.

Akyol teaches the fifth number of blocks comprises a difference between the first number of blocks and the second number of blocks *(i.e. the remaining size of the request is determined by subtracting the number of slots already allocated from the request size, col. 8, lines 1-14).*

It would have been obvious to one of ordinary skill of the art having the teaching of Owada, Cooper, Guenther, Schmuck and Akyol at the time the invention was made to modify the system of Owada, Cooper, Guenther, and Schmuck to include the limitations as taught by Akyol.

One of ordinary skill in the art would be motivated to make this combination in order to access control and resource allocation within communications networks in view of Akyol *(col. 1, lines 13-19),* as doing so would give the added benefit of performing dynamic media access and resource allocation in a multi-tier wireless ATM network supporting multiple users, multiple connections per user, and multiple traffic types with different service priorities as taught by Akyol *(col. 1, lines 13-19).*

14. Claims 46, 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu et al. (US Patent No. 6,493,347), in view of Cooper et al. (US Patent No. 6,055,547).

As per claim 46, Sindhu teaches a method comprising:

receiving at a storage server *(i.e. memory bank includes a global data area for storing portions of the data packet, col. 2, lines 24-37)* a request for a space reservation for a data set *(i.e. data packet, col. 2, lines 24-37)* managed by the storage server; and

in response to the request,

computing a number of blocks *(i.e. dividing the data packet into a cells of a fixed size and storing the cells in a distributed memory, col. 3, lines 16-29)* needed to be reserved for the data set *(i.e. FIG. 9 is a schematic block diagram of a reservation table according to one embodiment of the present invention, col. 4, lines 58-59).*

reserving *(i.e. FIGS. 2b and 5a, , a reservation table 508, col. 7, lines 58-67)* of unallocated blocks equal to the computed number of blocks *(i.e. A switch is provided that includes an efficient allocation of memory across ports and does not exhibit head-of-line blocking. The allocation enables all ports to share memory resources, col. 3, lines 60-64).*

Sindhu does not fairly teach reserving for later allocation.

Cooper teaches:

reserving for later allocation *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, See Fig. 9, col. 10, lines 22-48).*

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu and Cooper at the time the invention was made to modify the system of Sindhu to include the limitations as taught by Cooper.

One of ordinary skill in the art would be motivated to make this combination in order to determine from the allocation tables which of the files and which of the blocks within the files are available in view of Cooper *(col. 2, lines 19-35)*, as doing so would give the added benefit of managing the allocation and releasing of memory space within files shared by a number of hosts as taught by Cooper *(col. 2, lines 9-18).*

As per claim 52, Cooper teaches a method as recited in claim 46, wherein said reserving for later allocation the number of unallocated blocks comprises:

setting a flag in a first metadata container associated with the data set, that indicates blocks have been reserved for the data set *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

15. Claims 47, 48, 49, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu et al. (US Patent No. 6,493,347), in view of Cooper et al. (US Patent No. 6,055,547), and further in view Owada et al. (US Patent No. 6,185,665).

As per claim 47, Cooper teaches a method as recited in claim 46, further comprising:

determining whether a space reservation has been performed for the data set *(i.e. Extended processing complex 182 allows references to cache files to be immediately directed to cache storage 190 for processing. It is also understood that cache storage 190 may be a non-volatile memory, col. 6, lines 51-65)*, and

in response to determining that a space reservation has been performed for the data set *(i.e. Allocate and release tables 251 contain representative tables A 253, B 255, and C 257 which manage the allocate and release of file space. Thus, table A 253, table B 255 and table C 257 may correspond to and control file A, file B, and file C contained within memory storage 242, or alternatively, may control file A 192, file B 194 and file C 196 contained within cache storage 190 of extended processing complex 182 as shown in FIG. 5 (see also, FIG. 6), col. 8, lines 39-54)*, allocating one or more blocks for said data without determining whether enough blocks are available for completing the write operation *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

Shindhu, Cooper do not teach performing a write operation to write data to the data set.

Owada teaches performing a write operation to write data to the data set *(i.e. the data block allocation means receives a file size together with the file writing request from the information processor, and allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31).*

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper and Owada at the time the invention was made to modify the system of Sindhu, Cooper to include the limitations as taught by Owada.

One of ordinary skill in the art would be motivated to make this combination in order to create a file extending over a plurality of optical disks in view of Owada *(col. 19, lines 14-19)*, as doing so would give the added benefit of shortening the time required for writing as taught by Owada *(col. 5, lines 1-6).*

As per claim 48, Owada teaches a method as recited in claim 47, further comprising:

in response to determining that a space reservation has not been performed for the data set, determining whether enough blocks are available for completing the write operation prior to allocating any blocks for said data *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19).*

As per claim 49, Shindhu, Cooper do not teach the storage server employs a methodology in which data to be written are written to new blocks instead of being written to blocks previously allocated for said data.

Owada teaches a methodology in which data to be written are written to new blocks instead of being written to blocks previously allocated for said data *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19).*

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper and Owada at the time the invention was made to modify the system of Sindhu, Cooper to include the limitations as taught by Owada.

One of ordinary skill in the art would be motivated to make this combination in order to create a file extending over a plurality of optical disks in view of Owada *(col. 19, lines 14-19)*, as doing so would give the added benefit of shortening the time required for writing as taught by Owada *(col. 5, lines 1-6)*.

As per claim 53, Cooper teaches examining the flag to determine whether blocks have been reserved for the data set *(i.e. Upon the request of instruction processor 14 to access a particular data element as either an instruction or operand, the directory of instruction cache 82 or operand cache 84, respectively, is queried to determine if the required data element is present within the associated cache resource. If the data element is present and valid, the access is completed at that level. If not, access is made to storage controller 12 via interface 90 for the block of eight 36 bit words containing the desired data element, col. 4, line 63 to col. 5, line 4)*.

Shindhu, Cooper do not teach a subsequent write operation.

Owada teaches a subsequent write operation *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19)*.

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper and Owada at the time the invention was made to modify the system of Sindhu, Cooper to include the limitations as taught by Owada.

One of ordinary skill in the art would be motivated to make this combination in order to create a file extending over a plurality of optical disks in view of Owada *(col. 19, lines 14-19)*, as doing so would give the added benefit of shortening the time required for writing as taught by Owada *(col. 5, lines 1-6)*.

16. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu et al. (US Patent No. 6,493,347), in view of Cooper et al. (US Patent No. 6,055,547), and further in view Keller et al. (US Patent No. 6,473,849).

As per claim 50, Sindhu, Cooper does not teach the request comprises a zero length write request.

Keller teaches the request comprises a zero length write request *(i.e. zero-length Write(Size) command, col. 12, lines 37-54)*.

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper, and Keller at the time the invention was made to modify the system of Sindhu, Cooper to include the limitations as taught by Keller.

One of ordinary skill in the art would be motivated to make this combination in order to generate a lock request in view of Keller, as doing so would give the added benefit of allowing for proper synchronization of lock operations within the distributed memory architecture as taught by Keller *(col. 12, lines 25-54)*.

17. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu et al. (US Patent No. 6,493,347), in view of Cooper et al. (US Patent No. 6,055,547), and further in view Guenther et al. (US Patent No. 5,109,336).

As per claim 51, Sindhu teaches a method as recited in claim 46, wherein said computing the number of blocks comprises:

computing a first number of blocks representing a number of blocks needed to accommodate a size of the data set *(i.e. dividing the data packet into a cells of a fixed size and storing the cells in a distributed memory, col. 3, lines 16-29)*;

Cooper teaches:

a second number of blocks representing a number of blocks already allocated for the data set *(i.e. BLOCK 1 of File C at 346, and BLOCK 3 of File C at 348, See Fig. 9, col. 10, lines 22-48);*

a third number of blocks representing a number of delayed allocated blocks for the data set *(i.e. BLOCK 2 of File C at 347, See Fig. 9, col. 10, lines 22-48);*

a fourth number of blocks representing the number of blocks needed to be reserved for the data set *(i.e., BLOCK N3 of File C at 349, See Fig. 9, col. 10, lines 22-48);*

Sindhu and Cooper do not teach:

step of computing a second, third, fourth number of blocks.

subtracting the second number of blocks and the third number of blocks form the first number of blocks to produce a fourth number of blocks representing the number of blocks needed to be reserved for the data set.

Guenther teaches the steps of computing, subtracting *(i.e. The number of blocks allocated from the global storage list but not yet returned is calculated by monitoring the number of blocks of this size allocated of the global storage list and subtracting from this the number of blocks from this size returned to the global storage list, col. 6, lines 19-37).*

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper and Guenther at the time the invention was made to modify the system of Sindhu, Cooper to include the limitations as taught by Guenther.

One of ordinary skill in the art would be motivated to make this combination in order to monitor the number of blocks allocated of the global storage in view of Guenther *(col. 6, lines 19-37)*, as doing so would give the added benefit of delivering a process of efficiently managing working storage by combining queues of fixed size blocks and a global list of blocks of random sizes as taught by Guenther *(col. 2, lines 35-52).*

18. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu et al. (US Patent No. 6,493,347), in view of Cooper et al. (US Patent No. 6,055,547), and further in view Baylor et al. (US Patent No. 5,634,096).

As per claim 54, Sindhu, and Cooper do not teach reserving for later allocation the number of unallocated blocks comprises:

incrementing a reserved block count in a second metadata container associated with the data set by the number of blocks needed, the reserved block count indicating how many unallocated blocks have been reserved for data sets managed by the storage server.

Baylor teaches incrementing a reserved block count in a second metadata container associated with the data set by the number of blocks needed, the reserved block count indicating how many unallocated blocks have been reserved for data sets managed by the storage server *(i.e. When a block of the active file is overwritten, the blocks used by the file and the total blocks used by the system are incremented, and the remaining blocks reserved for the active file and the total remaining blocks reserved by the system are decremented. When a checkpoint is deleted, the blocks uniquely used by the checkpoint are de-allocated, the counts of blocks used by the file and blocks used by the system are decremented, and the count of blocks reserved for the system is decremented by the current count of blocks reserved for the active file. The number of blocks reserved for the active file is reset to zero, col. 6, lines 34-44).*

It would have been obvious to one of ordinary skill of the art having the teaching of Sindhu, Cooper, and Baylor at the time the invention was made to modify the system of Sindhu, Cooper, to include the limitations as taught by Baylor.

One of ordinary skill in the art would be motivated to make this combination in order to generate the redundant data without significantly affecting the overall system performance in view of Baylor *(col. 1, lines 29-42),* as doing so would give the added benefit of taking checkpoints or "snapshots" of the global disk state, and storing redundant information at those checkpoints. When a failure occurs, the computer can be returned to its most recent checkpoint, and any lost data can be restored from the redundant information stored with that checkpoint as taught by Baylor *(col. 1, lines 29-42).*

19. Claims 55-57, 60, 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US Patent No. 6,055,547), in view of Owada et al. (US Patent No. 6,185,665).

As per claim 55, Cooper teaches a storage server comprising:

a processor *(Figs. 6-8);*

a network interface through which to communicate with a remote client *(Figs. 6-8);*

a file system *(Figs. 6-8);* and

a storage device storing code which, when executed by the processor *(Figs. 6-8)*, causes the storage server to execute a process that includes,

computing a number of blocks needed to accommodate the file size *(i.e. BLOCK 1, 2, 3, N3 of File C, See Fig. 9; Each file has a number of blocks, col. 2, lines 19-35; The size of the file may be preregistered to indicate the maximum capacity of the particular file. The fourth column at 337 represents the number of blocks within the corresponding file in which data can be allocated and released, col. 10, lines 22-48);*

reserving for later allocation a number of unallocated blocks in the file system equal to the number of blocks needed to be reserved to accommodate the file *(i.e., BLOCK N3 of File C at 349, See Fig. 9, col. 10, lines 22-48);*

determining whether a block reservation has been performed for the file *(i.e. Extended processing complex 182 allows references to cache files to be immediately directed to cache storage 190 for processing. It is also understood that cache storage 190 may be a non-volatile memory, col. 6, lines 51-65)*, and

in response to determining that a block reservation has been performed for the file *(i.e. Allocate and release tables 251 contain representative tables A 253, B 255, and C 257 which*

manage the allocate and release of file space. Thus, table A 253, table B 255 and table C 257 may correspond to and control file A, file B, and file C contained within memory storage 242, or alternatively, may control file A 192, file B 194 and file C 196 contained within cache storage 190 of extended processing complex 182 as shown in FIG. 5 (see also, FIG. 6), col. 8, lines 39-54), allocating one or more blocks for said data in the file system without determining whether enough blocks are available in the file system for completing the operation *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

Cooper does not teach:

receiving a signal corresponding to a request for a space reservation operation for a file in the file system.

performing a write operation to write data to the file.

Owada teaches:

receiving a signal corresponding to a request for a space reservation operation for a file in the file system *(i.e. the data block allocation means receives a file size together with the file writing request from the information processor, and allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31).*

performing a write operation to write data to the file *(i.e. write file data, Figs. 6. 9).*

It would have been obvious to one of ordinary skill of the art having the teaching of Cooper and Owada at the time the invention was made to modify the system of Cooper to include the limitations as taught by Owada.

One of ordinary skill in the art would be motivated to make this combination in order to create a file extending over a plurality of optical disks in view of Owada *(col. 19, lines 14-19)*, as doing so would give the added benefit of shortening the time required for writing as taught by Owada *(col. 5, lines 1-6).*

As per claim 56, Owada teaches a storage server as recited in claim 55, whether said process further comprises:

in response to determining that a block reservation has not been performed for the file, determining whether enough blocks are available in the file system for completing the write operation *(i.e. write file data, Figs. 6. 9)* prior to allocating any blocks for said data in the file system *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19).*

As per claim 57, Owada teaches a storage server as recited in claim 55, wherein the file system employs a methodology in which data to be written are written to new blocks *(i.e. write file data, Figs. 6. 9)* instead of being written to blocks previously allocated for said data *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19).*

As per claim 60, Cooper teaches a storage server as recited in claim 55, wherein said reserving for later allocation the number of unallocated blocks in the file system comprises:

setting a flag in a first metadata container associated with the file, that indicates blocks have been reserved for the file *(i.e. A sixth column shown at 300 indicates whether any of the blocks at 337 are currently allocated, col. 10, lines 22-48).*

As per claim 61, Cooper teaches a storage server as recited in claim 60, wherein said process further comprises:

examining the flag to determine whether blocks have been reserved for the file *(i.e. Upon the request of instruction processor 14 to access a particular data element as either an instruction or operand, the directory of instruction cache 82 or operand cache 84, respectively, is queried to determine if the required data element is present within the associated cache resource. If the data element is present and valid, the access is completed at that level. If not, access is made to storage controller 12 via interface 90 for the block of eight 36 bit words containing the desired data element, col. 4, line 63 to col. 5, line 4).*

Owada teaches a subsequent write *(i.e. write file data, Figs. 6. 9)* operation *(i.e. when the unused data blocks on the selected optical disk are used up at step S402, another optical disk is selected again at step S401, whereby a file extending over a plurality of optical disks can be created, col. 19, lines 14-19).*

20. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US Patent No. 6,055,547), in view of in view of Owada et al. (US Patent No. 6,185,665), and further in view of Keller et al. (US Patent No. 6,473,849).

As per claim 58, Cooper, Owada does not teach a storage server as recited in claim 55, wherein the signal represents a zero length write request.

Keller teaches the request comprises a zero length write request *(i.e. zero-length Write(Size) command, col. 12, lines 37-54).*

It would have been obvious to one of ordinary skill of the art having the teaching of Cooper, Owada, and Keller at the time the invention was made to modify the system of Cooper, Owada to include the limitations as taught by Keller.

One of ordinary skill in the art would be motivated to make this combination in order to generate a lock request in view of Keller, as doing so would give the added benefit of allowing for proper synchronization of lock operations within the distributed memory architecture as taught by Keller *(col. 12, lines 25-54).*

21. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US Patent No. 6,055,547), in view of in view of Owada et al. (US Patent No. 6,185,665), and further in view of Guenther et al. (US Patent No. 5,109,336).

As per claim 59, Owada teaches a storage server as recited in claim 55, wherein said computing the number of blocks needed to be reserved to accommodate the file comprises:

Owada teaches computing a first number of blocks needed to accommodate the file size *(i.e. allocates data blocks corresponding to the received file size to the file, before the data writing, col. 9, lines 20-31)*

Cooper teaches:

a first number of blocks representing a number of blocks needed to accommodate a size of the file *(i.e. BLOCK 1, 2, 3, N3 of File C, See Fig. 9; Each file has a number of blocks, col. 2, lines 19-35; The size of the file may be preregistered to indicate the maximum capacity of the particular file. The fourth column at 337 represents the number of blocks within the corresponding file in which data can be allocated and released, col. 10, lines 22-48);*

a second number of blocks representing a number of blocks already allocated for the file *(i.e. BLOCK 1 of File C at 346, and BLOCK 3 of File C at 348, See Fig. 9, col. 10, lines 22-48);*

a third number of blocks representing a number of delayed allocated blocks for the file *(i.e. BLOCK 2 of File C at 347, See Fig. 9, col. 10, lines 22-48);*and

a fourth number of blocks representing the number of blocks needed to be reserved for the data set *(i.e., BLOCK N3 of File C at 349, See Fig. 9, col. 10, lines 22-48);*

Cooper, Owada do not teach:

the step of computing second, third and fourth number of blocks.

subtracting the second number of blocks and the third number of blocks from the first number of blocks to produce a fourth number of blocks representing the number of blocks needed to be reserved to accommodate the file.

Guenther teaches the step of computing, subtracting *(i.e. The number of blocks allocated from the global storage list but not yet returned is calculated by monitoring the number of blocks*

of this size allocated of the global storage list and subtracting from this the number of blocks from this size returned to the global storage list, col. 6, lines 19-37).

It would have been obvious to one of ordinary skill of the art having the teaching of Cooper, Owada and Guenther at the time the invention was made to modify the system of Cooper, Owada to include the limitations as taught by Guenther.

One of ordinary skill in the art would be motivated to make this combination in order to monitor the number of blocks allocated of the global storage in view of Guenther *(col. 6, lines 19-37)*, as doing so would give the added benefit of a process of efficiently managing working storage by combining queues of fixed size blocks and a global list of blocks of random sizes as taught by Guenther *(col. 2, lines 35-52).*

22. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US Patent No. 6,055,547), in view of in view of Owada et al. (US Patent No. 6,185,665), and further in view of Baylor et al. (US Patent No. 5,634,096).

As per claim 62, Cooper, and Owada does not teach reserving for later allocation the number of unallocated blocks in the file system comprises:

incrementing a reserved block in a second metadata container associated with the file by the number of blocks needed, the reserved block count indicating how many unallocated blocks have been reserved for files in the file system.

Baylor teaches incrementing a reserved block in a second metadata container associated with the file by the number of blocks needed, the reserved block count indicating how many unallocated blocks have been reserved for files in the file system *(i.e. When a block of the active*

file is overwritten, the blocks used by the file and the total blocks used by the system are incremented, and the remaining blocks reserved for the active file and the total remaining blocks reserved by the system are decremented. When a checkpoint is deleted, the blocks uniquely used by the checkpoint are de-allocated, the counts of blocks used by the file and blocks used by the system are decremented, and the count of blocks reserved for the system is decremented by the current count of blocks reserved for the active file. The number of blocks reserved for the active file is reset to zero, col. 6, lines 34-44).

It would have been obvious to one of ordinary skill of the art having the teaching of Cooper, Owada, and Baylor at the time the invention was made to modify the system of Cooper, Owada, to include the limitations as taught by Baylor.

One of ordinary skill in the art would be motivated to make this combination in order to generate the redundant data without significantly affecting the overall system performance in view of Baylor *(col. 1, lines 29-42),* as doing so would give the added benefit of taking checkpoints or "snapshots" of the global disk state, and storing redundant information at those checkpoints. When a failure occurs, the computer can be returned to its most recent checkpoint, and any lost data can be restored from the redundant information stored with that checkpoint as taught by Baylor *(col. 1, lines 29-42).*

Response to Arguments

23. Applicant's arguments regarding the prior arts do not suggest newly amended and added claims, with respect to claims 1-11, 22-34, 46-62 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (571) 272-4112. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham, can be reached on (571) 272-7079. The fax number to this Art Unit is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mirandale

Miranda Le
August 01, 2007